Types of Supplementary Aids and Services for Students with Significant Support Needs

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Abstract

Supplementary aids and services have been a provision in special education law since PL 94-142, however, almost no guidance has been provided to help teams make decisions about their appropriate selection and use. In this exploratory study, we explore the types of supplementary aids and services selected for students with significant support needs using a conventional content analysis of Individual Education Program (IEPs) from 88 students in grades K-12. Results illustrate the wide variation in types of supplementary aids and services chosen for students overall. Curricular accommodations and personnel supports were the most commonly identified supports, while supports to assist students to communicate and make meaning of curriculum (e.g., curricular modifications) were less common, as were less intrusive supports such as peer assisted learning. Implications for policy, practice, and research are provided.

Keywords: supplementary aids and services, least restrictive environment, individualized education programs, significant support needs

Types of Supplementary Aids and Services for Students with Significant Support Needs

Students with significant support needs, defined as the 1% of students with the most severe disabilities who are eligible for their state's alternate assessment (Taub, McCord, & Ryndak, 2017), are at particular risk of being excluded from general education contexts and routines (e.g., Kurth, Morningstar, & Kozleski, 2014; Morningstar, Kurth, & Johnson, 2017). Individualized Education Program (IEP) team members, consisting of school personnel and family members, make these placement decisions following guidelines specified in the Individuals with Disabilities Education Improvement Act (IDEA, 2004). The least restrictive environment (LRE) provision of IDEA stipulates that:

> "To the maximum extent appropriate, children with disabilities are educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular classes *with the use of supplementary aids and services* cannot be achieved satisfactorily" (emphasis added, [Section 612(a)(5)]).

In fact, each IEP "must include" a statement of needed supplementary aids and services (34 CFR § 300.320(a)(4)). Further, case law has reinforced the importance of supplementary aids and services (SAS) in providing an inclusive, general education teaching experience for students with disabilities. For example, Daniel R.R. v. State Board of Education (1989) found schools must take steps to accommodate children in the regular education environment, beyond simply "token gestures, but must modify and supplement general education" (p. 6). Furthermore, the court found in Greer v. Rome City School District (1991) schools must consider the "whole range" of SAS to make general education placement effective. The case of Sacramento City

School District v. Rachel H. (1994) took this a step further, finding that effective services could have been provided in general education with appropriate SAS.

Considered together, the description of SAS in IDEA and the interpretations of LRE in case law point to SAS as a necessary component of inclusive education. This is because the provision of appropriate SAS is vital to ensure students have access to education in the LRE. Further, appropriate SAS should keep the student in place and, if applied correctly, should prevent unnecessary placements outside of the general education class. In this way, supplementary aids and services are the "lynchpin" of inclusive education: They maintain students' placement in their least restrictive environments.

Despite the crucial role of SAS in LRE (Julnes, 1994), SAS remains poorly defined in IDEA and in practice. IDEA 2004 defines SAS as "aids, services, and other supports that are provided in regular education classes, other education-related settings, and in extracurricular and nonacademic settings, to enable children with disabilities to be educated with nondisabled children to the maximum extent appropriate" (§300.42). Yet, the definition of aids, services, and supports that constitute SAS are unspecified. Consequently, IEP teams "lack a clear process for discussing and determining those aids and services" (Etscheidt & Bartlett, 1999, p. 169).

Definitions of Supplementary Aids and Services from the Field

Absent clear definitions of SAS from Congress, IEP teams must rely on definitions in book chapters, research articles, guidelines for writing SAS provided by states departments of education, and on-line sources. Inspection of these materials reveal a range of services and supports fall under the general purview of SAS. For example, the PACER center, in a 2014 online guide for Minnesota parents, notes SAS include accommodations, assistive technology, and paraprofessional support (p. 20). Other sources provide more detailed examples of SAS,

often grouped by domains. For example, the Michigan Department of Education, Office of Special Education and Early Intervention Services provides guidance for developing SAS focusing on instruction, assessment, curriculum, and supports and modifications to the environment (2010). Yet others provide extensive lists of SAS. For example, Villa, Thousand, and Nevin (2004) discuss 10 domains of SAS, including level of staff support (i.e., consultation, team teaching), social interaction support, testing adaptations, self-management, assignment modifications, specialized equipment, teaching strategies, material modifications, pacing of instruction, and environmental modifications.

While definitions and examples of SAS exist in books and websites, essentially no research exists related to SAS, including types of SAS provided to students and their effectiveness. This is true despite the importance of peer-reviewed research noted in IDEA (i.e., research-based practices are mentioned over 20 times in the Act); further, the Act specifically calls for the use of SAS based on peer-reviewed research. Only one peer-reviewed examination of SAS was located in the extant literature; it describes a four-part process for determining SAS (Etscheidt & Bartlett, 1999). As part of this process, Etscheidt and Bartlett urge IEP teams to consider four domains of potential SAS: social-behavioral support needs, collaborative support needs for school personnel, supports for the physical environment, and supports for instruction. A significant limitation of this article, however, is its lack of empirical basis. Rather, Etscheidt and Bartlett (1999) provide a legally-based rationale for developing SAS only.

A clearer understanding of how IEP teams conceptualize SAS is needed to begin to understand the effectiveness of SAS in enabling students with significant support needs to be taught in general education settings. To begin to understand the impact of SAS on facilitating inclusive education, this exploratory study engaged in a descriptive analysis of how

supplementary aids and services are conceptualized in IEPs for students with significant support needs. The following research question was addressed: What types of SAS are selected for students with significant support needs?

Method

Participants

Teachers of students with significant support needs provided IEPs to the research team following university approved human subjects procedures. A total of 88 de-identified IEPs were obtained; all IEPs were de-identified by individuals who were not part of the research team prior to analysis to protect participant confidentiality. Prior to analysis, each IEP was evaluated using the following inclusion criteria: (1) IEP written for a student in grade K-12; and (2) the student had a significant support need, as evidenced by eligibility for their state's alternate assessment.

All 88 de-identified IEPs from six states were included in the analysis. The six states were demographically and geographically disparate, representing the West coast (n = 6 IEPs), Midwest (n = 79 IEPs), and East coast (n = 3 IEPs). We used IDEA Section 618 categories to define student placement. Students spending 80% or more of the school day in general education settings were categorized as taught in 'inclusive' settings. Students spending between 41-79% of the school day in general education were taught in 'resource' settings. Those students spending less than 40% of the school day in general education settings were categorized as taught in 'self-contained' classes. No students were taught in separate schools or home/hospital settings. As part of this exploratory study, we purposefully solicited IEPs representing a range of placement options to fully explore the range of SAS in student IEPs. Twenty-four students were taught in inclusive settings (28%), 22 in resource settings (25%), and 39 in self-contained settings (45%).

In three instances, the percent of time a student was taught in general education could not be determined from thorough inspection of the IEP.

Students ranged in age from 5 to 18 (M = 10.5), representing grades K to 12; however, in 10 IEPs the exact age of the student could not be determined as this information was obscured during the de-identification process. Consequently, statistical descriptions of ages of those students are not included. IEPs from 63 males and 25 females were included. Student primary disability labels included autism (n = 31), intellectual disability (n = 19), multiple disabilities (n = 6), orthopedic impairment (n = 6), other health impairment (n = 5), developmental delay (n = 5), speech language disorder (n = 3), emotional behavioral disorder (n = 1), hearing impairment (n = 1), and deaf-blindness (n = 1). In eight instances, the student's primary disability could not be determined, as this information was obscured in the de-identification process. Analysis of the entire IEP (as described next) was completed to assure each student met inclusion criteria.

Procedures

We examined de-identified IEPs, paying particular attention to the demographic (i.e., eligibility), present level of performance, and SAS sections. We reviewed the demographic (eligibility) page(s) of each IEP to determine demographic information about each student. Further, we reviewed students' present levels of academic and functional performance statements to understand the characteristics of each participating student and verify the student was, indeed, a student with significant support needs according to our definition (i.e., the 1% of students with significant disability who are eligible for the alternate assessment). Finally, the SAS section of each IEP was carefully read and rated, as described next.

Data analysis. Considering the exploratory nature of this study, a conventional content analysis of student IEPs was completed (Hsieh & Shannon, 2005). A conventional content

analysis is used when, as in the current study, existing theory or research literature is limited (Hsieh & Shannon, 2005). Categories were inductively developed through a review of six IEPs not included in the study. A codebook was developed based on the categories which emerged from the inductive analysis. This codebook guided our subsequent analysis of the included IEPs.

Each author first copied the SAS from the IEP verbatim into a MS Excel document. Next, each author assigned each SAS from every IEP to one or more of the domains listed in the SAS codebook. We applied a dichotomous code for each SAS in every IEP analyzed. A '0' was entered for SAS domains that were not present in the IEP, and a '1' was entered for SAS domains that were present in the IEP. The research team met to discuss agreements and disagreements in assigning of SAS to particular domains. Inter-rater reliability (IRR) was calculated by dividing the number of agreements by the sum of the number of ratings in agreement and disagreement (total ratings), multiplied by 100 to obtain a percentage. Inter-rater reliability was 96.8%.

Ultimately, each author independently rated 22% of SAS across all 88 IEPs, with 3 authors completing IRR on 29% of SAS. We used the same formula for calculating reliability as we did in the training IEPs. Inter-rater reliability was 96% (range: 87-100% for each item). Disagreements in coding centered on definitions of various SAS. When there was a disagreement, these were resolved by reviewing the codebook and discussing the rating until agreement was reached across all raters. Consensus was reached on all items prior to analysis.

Codebook

A total of four dimensions of SAS across 21 domains were included in the codebook (see Table 1). These domains included curricular and testing modifications and accommodations (as defined by Causton-Theoharis, 2009); grading; environmental supports; timing, pacing, and

length; organization; visual supports; personnel supports; and a host of supports related to unique student needs (e.g., communication, behavior, vision, hearing). We used the codebook to rate each SAS allowing assignment of any SAS to into one or more relevant domain.

<Table 1 here>

Results

Types of SAS Selected for Students with Significant Support Needs

A total of 1070 SAS statements were identified across the study IEPs. The total number of SAS coded within an IEP ranged from 0-43, with a mean of 12 SAS per IEP. Next, we examined domains of SAS for each IEP. As seen in Table 1, the majority of SAS were in curricular accommodations (n = 147, 14%) and personnel supports domains (n = 113, 10%). Other common SAS domains include anxiety, behavior, and emotional regulation (n = 106, 10%) environmental supports (n = 83, 8%), and timing, length, and frequency (n = 80, 7%). Modifications to curriculum and testing were present in 60 (6%) and 36 (3%) of all SAS statements, respectively.

Physical / Accessibility Dimension

We defined the physical / accessibility dimension as supplementary aids and services to make environments accessible to students with sensory, health, and motor support needs. Six domains of SAS were connected to this dimension: environmental, assistive technology, health and safety, sensory, hearing, and vision.

Environmental supports. We defined environmental supports as adjustments to spaces (e.g., lighting, temperature, location, and distractions) and furniture (e.g., desks, chairs). Eighty-three examples of SAS in this domain were identified. Of those 83, 30 stated the student would have “preferential seating.” In most cases, what constituted preferential seating was not defined.

In six cases, there was some description (e.g., “close to instruction,” “near teacher and away from distractions,” seating that “allows legitimate movement”). Alternate setting was also described as an environmental SAS in 29 of the IEPs. Again, this was typically not defined. It was often characterized as providing students personal space (e.g., “personal desk space, “give personal space, ask for permission to enter space”). Providing access to lockers was mentioned in 10 SAS (e.g., “alternate locker access,” “magnetic locker key”); similarly, providing modified seating and desks was mentioned in seven SAS statements (e.g., “lowered table and/or smaller chair”). Adjusting noise and light were mentioned in seven SAS statements (e.g., “light filters/reduced overhead lighting during academic instruction”).

Assistive technology. For this study, assistive technology (AT) was defined as technological supports for purposes other than communication, including motor and academic accessibility tools. Analysis of the study IEPs found AT supports were overwhelmingly described as tools, such as slant boards, adaptive scissors, and adaptive seats (e.g., “Rifton chair”). In fact, of the 52 SAS statements identified in the AT domain, 20 were related to tools. Eleven AT statements referred to mobility supports, such as “adapted trike…in PE” and “gait belt when assisting student to stand or walk.” Of these, four mobility AT statements specifically called for students to access an “alternative activity” during motor skills activities. Eleven AT SAS statements were non-specific, such as “AT for academic work” or “AT for self-regulation. Other times, the statement called for tools such as “universal cuff when participating in an activity that requires him to hold an object.” Another 10 AT statements referred to tools for literacy (i.e., reading and writing), and included AT such as “books on tape” and “keyboard[s].”

Health and safety. We defined health and safety supports as those supports provided to students to facilitate mealtime, use of restroom, medical supports, and general supports to ensure

student safety. Assistance in using the restroom was the most common health and safety related SAS, appearing in 14 statements (e.g., “changing table for bathroom,” “have the opportunity to engage in a toileting routine at least 2 times per day,” “diaper checked and changed if needed”). Assistance during meal time was also common, appearing in 13 SAS statements. Adapted eating materials (e.g., utensils, cups, straws) was the most common meal time SAS with five statements. The precise nature of the adaptations, however, were vague (e.g., “modified spoon and fork”). Nine statements focused on general adult support (e.g., “adult support to ensure safety”). Five statements were broad supports focused on self-care, such as “assistance to address self-care needs;” another four focused on mobility (e.g., “access to wheelchair” and “gait trainer”). Three SAS statements targeted individual medical concerns, such as wearing helmets or access to “VNS [vagus nerve stimulator] magnets” to control seizures.

Sensory supports. We defined sensory supports as rooms, breaks, and tools to address sensory needs. A total of 24 SAS statements referred to sensory supports. Thirteen SAS statements referred to various sensory tools, such as fidgets, body compression tools, and “sensory materials for calming and attending.” What constitutes a fidget, sensory room, or sensory tool was defined in four statements; in these statements, tools such treadmills, weighted blanket, wiggle seat, music, and swings were listed. In seven SAS statements, students were to be provided access to sensory rooms (e.g., “use of sensory room”). The use of “sensory breaks” appeared in four SAS statements. How often these breaks were to be provided, where, for how long, and under what conditions were not described; however, two statements included language “throughout the day” and “frequent” when describing access to breaks. Two SAS referred to sensory “diets” or programs.

Vision and hearing supports. Vision and hearing SAS were defined as supports for vision or hearing impairments. Vision supports were mentioned in 13 SAS statements. These generally concerned the size, font, and location of visual materials. For example, statements that the student "will be provided with enlarged materials" appeared, as did statements such as "hold all objects at eye level." In no SAS was the size of text noted, only general statements that materials should be larger. Similarly, in one SAS did the IEP team describe how close objects should be held to facilitate a student's vision. Hearing supports were also noted in seven SAS statements. Five of the seven hearing SAS focused on amplification systems (e.g., "sound field system," and "FM system").

Instructional Dimension

We defined the instructional dimension as SAS providing supports for students to engage in instructional materials and activities. Eight SAS domains constitute the instructional domain: curricular accommodations, timing and length, cognitive, curricular modifications, visual supports, testing modifications, testing accommodations, and grading.

Curricular accommodations. We defined curricular accommodations as supports to access curriculum. As described previously, curricular accommodation was the most common SAS domain, appearing in 147 statements. Of these, support for writing was most common, with 70 statements. Writing supports included use of graphic organizers, dictionaries, and word banks (27 statements), alternatives to handwriting (e.g., dictation, keyboarding; 16 statements), assistance with note taking (15 statements), and providing a scribe (12 statements). Typically, these supports were not specific or measurable, and consisted of general directives such as "teacher provided notes" and "word banks for writing assignments." General accommodations appeared in 29 statements, and included statements such as "curriculum differentiated" and "pre-

teach vocabulary." The next most common curricular accommodation we coded was related to providing instructions, appearing in 21 statements. This included statements such as "providing clarifications to instructions" and "read aloud instructions." Reading accommodations were noted in 17 SAS statements. These included reading passages aloud to students (12 statements; e.g., "read aloud"). Other reading supports included statements such as "copy of classroom texts to reference for literacy activities" and "auditory books." Lastly, math supports were least common, found in 10 statements. These were broad statements, such as providing "manipulatives" and "calculator for solving multi-digit equations."

Timing, length, chunking, and practice. We defined this SAS as alterations to the time, length, and presentation of instructional (non-testing) materials and activities. This appeared in 80 SAS statements. Of these, allowing more time was most common, appearing in 42 SAS statements. In 41 of these statements, the exact words "extended time" appeared. In one SAS statement was extra time defined (in this case, "double time" was permitted for assignments). It was also unclear when students would, and would not require extra time. In 17 statements was information for providing extra time explained (e.g., "allow extra time for transitions, during passing periods and meals"). Similarly, the common SAS to reduce the length of assignments or work periods was not specific or measurable. While reduced length appeared in 20 statements, none indicated how much the content should be reduced. Rather, the statements were general, such as "shorten assignments" and "reduce number of questions." Twelve SAS statements referred to chunking and breaking assignments into separate pieces, such as "break tasks into small steps" and "completion in parts." It was unclear from these statements which tasks should be broken up, or how. Lastly, the directive "repeated review and practice" appeared in six SAS statements.

Cognitive and memory. We defined cognitive and memory supports as those supports focused on easing cognitive and processing time demands. A total of 65 memory and cognitive SAS statements were identified. These supports targeted repeated or varied instructions (27 statements), such as "obtain attention…before giving directions," and "[provide] short verbal direction[s]." Providing cues and prompts was noted in 19 statements, and included statements such as "prompt cards." Most, however, simply stated instructors should "give extra cues and prompts." Thirteen SAS statements referred to processing time; most were not specific (e.g., "allow time for processing"), although three added details such as provide "wait time up to 30 seconds to respond." Finally, supports for attention and reminders of expectations were present in six statements. These included supports such as "check often for understanding" and "monitor attention to task." Once again, it was unclear in most of the statements how often, and in what conditions, one should provide these supports.

Curricular modifications. Curricular modifications were defined in this study as supports to provide meaning to curricular content; these appeared in 60 SAS statements. Of those, changing the difficulty or level of the material was most common, appearing in 21 statements. For example, statements described a need to "lower level or difficulty of assignments" and modify work to the student's "instructional level." Importantly, these statements almost never specified how materials should be simplified or changed. Another 18 statements were identified as general references to modified materials. For example, use of a "modified spelling list" and "modified course content" exemplify these general statements. Twelve statements referred to modified instructional formats or materials, such as "highly structured graphic organizers with guiding questions and sentence frames to help…writing." Others more generally referred to reading and scribing all content for students. Finally, nine

statements referenced the need for students to use an alternate curriculum. For example, one SAS read the student would have a "replaced curriculum in math," while another stated the student would have a "curriculum to only stress the essentials." What constitutes "essentials," and how curriculum would be replaced, (and with what), were not provided. Four SAS statements made any reference to the general education curriculum. One of these statements was to clarify the student "will not participate in classroom instruction in her general education setting." The other three references to the general education curriculum occurred in statements referring to general access to the curriculum; for example, stating the curriculum would be modified "to support access to general education curriculum."

General visual supports. Fifty-one statements referred to general visual supports, defined as visuals used to support learning (as opposed to those used for communication or behavior). Of these, 24 statements referred to visuals for schedules and routines. For example, "visual schedule throughout the day" and "visual schedule of routine" illustrate this category. Another 16 statements referred to visual supports broadly, such as "use of visuals" and "visual supports." In these instances, the type or purpose of visuals was not clear. Finally, 11 statements in this domain referred to visual cues, checklists, or demonstrations. For example, "visual demonstration" and "visual task lists" were part of this category.

Testing modifications and accommodations. Thirty-six statements referred to testing modifications, which we defined as supports to make meaning of tests, and another 27 to testing accommodations, defined here as supports to access the content of tests. In general, these statements were short and non-descriptive. For example, the exact words "modify test" or "modify test format" appeared 23 times. Tests based on the alternate or extended content standards were referenced six times. In the remaining SAS testing modification statements,

testing based on modified assignments and curriculum was described (e.g., "modification to the difficulty of…assessments"). Another 27 SAS statements referred to testing accommodations, defined as supports to access tests. The most common, testing accommodation (n = 7) was changes to setting (e.g., "take test in a quiet setting"). Adjusting the length of tests (e.g., "reduce number of test items") and allowing test items to be read aloud to students were also common (n = 6, respectively). The next most common testing accommodations, with four statements, was allowing more time for students to complete tests. However, no SAS statements described how much extra time students should have, nor how many fewer test items they should complete. Finally, the use of notes and study guides while taking tests were described in four statements.

Grading. A total of 25 SAS statements referred to grading, which we defined as grading for courses and assignments. Of these, 13 statements described use of a pass/fail grading system, generally in broad terms (e.g., "pass/fail option" and "pass fail grading"). Another eight statements were categorized as reflecting a modified weighting system to assign grades. These included statements such as "modify weights of course components." Finally, four statements directed instructors to avoid unnecessary penalties for spelling (n = 2) or penmanship (n = 2).

Social, Behavior, and Communication Dimension

We defined the social, behavior, and communication dimension of SAS as those supports targeting non-academic learning needs for students. Four SAS domains constituted this dimension, including anxiety, behavior, and emotional supports, social supports, communication supports, and supports for transition.

Anxiety, behavior, and emotional supports. We defined this domain as supports to enable students to regulate, self-monitor, and use tools such as token economy systems and schedules to meet their psychological, behavioral, and emotional needs. A total of 106 SAS

statements fell in this domain, and were grouped into four categories. The most common category in this domain was related to breaks, occurring in 31 statements. The exact words "frequent breaks" appeared in 19 SAS; the nature, length, and frequency of these breaks was unclear. The remaining instances referring to breaks were also unclear, such as "proactive breaks." In fact, in only one case was the nature and frequency of breaks defined; in this case, as "up to 3 regulation breaks a day, one right after lunch." The use of reinforcement systems, such as praise, incentive programs, and token economy systems was also a common SAS, appearing in 29 statements. The use of "positive reinforcers" appeared verbatim in 10 statements; again, the remaining statements were vague (e.g., "frequent praise for success" and "structured incentive plan"). Twenty-six SAS statements referred to proactive supports, including social narratives (e.g., "social stories"), provision of choices (e.g., "offer choices in non-preferred activities"), first-then charts, visuals (e.g., "visual schedule and visual supports schedule of main parts of his day will be available"), and priming for changes in routine (e.g., "alert [student] to transitions in advance so she can prepare herself"). Finally, 20 SAS statements referred to adult-dependent supports, including monitoring, supervising (e.g., "supervision/support for appropriate school behavior"), checking-in, and prompting student behavior (e.g., "when engaging in hand flapping or visual stimulation, redirect using least restrictive visual prompting (i.e., gentle wrist prompts to keep hands down) as soon as the behavior occurs").

Communication supports. We defined communication supports as aided (e.g., pictures, speech generating devices) and unaided (e.g., sign, spoken language). A total of 43 SAS referred to communication supports, with aided communication supports being most common (18 statements). These aided supports included tools such as "iPad mini with messaging capabilities…[used] as a communication device throughout his day to communicate with people

at school, in the community, and at work sites. This device will only be used at school and school-sponsored activities." Use of communication switches, pictures, objects, and general "AAC device" also represent this category. Use of communication partners was the next most common SAS within this domain (*n* = 13), and included provision of communication partners (e.g., "student will be provided with a communication partner") and activities of communication partners (e.g., "model correct grammar and speech sounds," and "encourage vocalization along with other modes of communication.") Unaided communication supports occurred in seven statements, and focused on sign language in five of these statements. Finally, five SAS statements in this domain referred to speech directed to the student. For example, the SAS "request with a general prompt 'tell me a sentence' to complete sentence response to communicate his requests, answers, comments, protests" exemplifies this category.

Transition supports. Transition supports were defined as supports to assist students in moving from one activity or space to another. Twenty-six SAS statements referred to transition. Of these, the most common related to priming students for transitions, appearing in 19 statements. For example, "foreshadow schedule change and/or other changes throughout the day;" this priming was sometimes verbal (e.g., "verbal warnings for transitions and changes in routine") and was sometimes visual (e.g., "visual schedule to foreshadow coming events"). Other times, this depended on adults (e.g., "adult support for transitioning"). The remaining SAS statements in this domain referred to providing routines, objects, and extra time for students to make transitions. For example, providing "extra time for transitions," access to "transition items," and use of timers are examples of the transition domain SAS in this category.

Social supports. We defined social supports as supports to develop reciprocal friendships, use of peer assisted learning strategies, and direct instruction of social skills. A total

of 21 SAS statements appeared in this domain, with social interaction supports being the most common with 11 statements. These supports were descriptive general statements that appeared to rely on adult intervention, such as "encourage peer interaction throughout the day in all environments" and "monitor and assist in all social situations." Four SAS statements referred to the use of social narratives to facilitate social interactions, such as "social stories …to increase positive social interaction." Three SAS mentioned use of social skills instruction and were quite varied, including use of a "voice meter during structure[d] social skills activities" and "explicit instruction on social skills and will be reminded to use replacement behaviors." Finally, another three SAS referred to peer assisted learning strategies, using the exact phrase "peer mentoring."

Collaborative Dimension

We defined the collaborative dimension as SAS provided to, or by, school staff. Three domains of SAS were connected to this dimension: personnel, staff training, and home-school communication.

Personnel supports. Personnel supports were defined in this study as any type of human supports (e.g., paraprofessionals, co-teachers, and specialists) who would provide support to students. This was one of the most frequent domains of SAS, with 113 statements. Personnel supports for academic and curricular access purposes were most common, with 24 statements. For example, "adult support throughout the day for curricular access" represents this category. Three statements in this category provide more detail in terms of context of adult support; for example, "adult support during reading, math, social studies, and science activities" is an example of a more detailed SAS in this category. Personnel supports for safety, physical, and personal needs was the next most frequent, with 21 statements. For example, the SAS statement "verbal cues to use the bathroom on a consistent schedule, supervision or strategic timing to use

the bathroom when other students are not in there, support to pull pants up all the way" is an illustrative example of this category. Eighteen statements referred to adult support for behavior or emotional regulation (e.g., "He requires adult support throughout his entire school day due to his behavioral and unique learning needs"), with three of these using the words "proximity control" to refer to the impact of adult presence on student behavior. General adult assistance was the next most common SAS in this domain, with the verbatim use of "adult support" alone occurring in 10 of the 17 general statements. Eleven statements noted a need for adult support during transitions (e.g., "assistance/escort between classes"). Ten statements referred to needs for students to check in with adults or work with a specialist. For example, one statement refers to a student's "access to a behavior coach." Another 10 statements referred to adult supports for specific non-academic classes (e.g., "adult support in art"). The remaining SAS statements in this domain referred to social and communication skills, including supports such as "support for peer to peer interactions (information about ASD provided to peers to help them understand differences), staff encourages peers to initiate and sustain interactions … create activities/situations that encourage peer to peer interactions."

Training and support for staff. We defined this domain as any training or direct support for instructors working with students, including use of collaboration, consulting, and training. A total of 30 SAS statements were connected to this domain. Chief among these were supports for school staff to learn to use assistive technology and aided communication tools along with mobility and positioning strategies, appearing in 21 statements. Statements such as training "on positioning and transferring (i.e., from stander to Rifton chair)," and "staff working with [Student] will be given instruction on how to use the technology he uses to be successful" are representative of this category. Seven statements referred to observation, consultation,

collaboration, co-planning, and co-teaching. In two statements, this was directed at related services providers (e.g., occupational or physical therapists). For example, one statement said the "[Physical therapist would be] available to consult staff as needed if concerns arise about gross motor skills or safety." Other statements were more reflective of all school team members, such as "Staff will collaborate regularly to address educational needs and behavioral challenges." The remaining SAS statements were general statements related to health, safety, personal care, and instructional strategies. For example, one statement requires "[Crisis Prevention Intervention] training." Another statement warns IEP team members to "be familiar with prompt dependency, he looks for approval."

Home-school communication. This domain was defined in the present study as planned communication and collaboration between schools and families. A total of 13 statements occurred in this domain. Five statements were simply reports to parents outlining what happened during the school day. For example, the statement "provide parents with school communication regarding class activities of the day" is representative of this category. Four statements referred to bi-directional home-school communication, including statements such as "weekly communication between classroom teacher and parent." Three statements referred to conferencing, including simply "parent conferencing." One statement simply told parents what to do ("ensure necessary homework is being completed").

Discussion

The purpose of this exploratory descriptive study was to determine how IEP teams conceptualize SAS for students identified with significant support needs. According to IDEA, SAS ensure special education services are provided in the least restrictive environment for students with disabilities. Our findings describe the range of SAS provided to students with

significant support needs, distributed across 21 domains. The wide-ranging scope of SAS provided these students, including the high frequency of SAS provided to individual students, is not surprising given the intensity of support needs of this population of students.

What did surprise us, however, was the types and frequencies of SAS in student IEPs. Given that most students with significant support needs, are taught outside of general education settings for most of the school day, this group of students should require substantial supports to make meaning of curriculum. We expected far more curricular and testing modifications than curricular and testing accommodations than we found. Instead, we found the most SAS in the accommodations domains. Similarly, many of the SAS described were simply reflective of teaching (such as providing manipulatives), and were not reflective of the specialized, individualized supports that may be expected for this population of students.

We were also troubled, though not surprised, to find the high reliance on personnel supports. Criticisms of reliance on paraprofessionals have persisted for decades (see, for example, Giangreco, Edelman, & MacFarland, 1997 and Giangreco, Suter, & Hurley, 2013). Our data reflect a reliance on paraprofessional and other personnel supports for students with significant support needs, implying that assignment of adult support constitutes an appropriate level and type of support for learners with significant support needs. Considering the explicit mandate in IDEA to use research-based SAS to the extent practicable, and the lack of research support for relying on paraprofessional supports, we expected to find SAS more reflective of research practices, such as peer assisted learning (e.g., Carter, 2017).

Another key finding from our analysis of SAS statements was the degree to which many statements were not specific or objective. Indeed, it would be difficult for a new IEP team member to interpret and implement the SAS statements as they were written, particularly

knowing when, how, how often, who, and where to provide documented SAS. This is particularly troubling given the high degree of special education teacher turnover (Hagaman & Casey, 2017); as a consequence of this turnover, it is likely new team members will be tasked with implementing existing IEPs. For this reason alone, it is critical for IEP developers to provide specific, objective information in the development of all SAS – including who will provide the SAS, in what circumstances, using what materials, and where.

Finally, the SAS in the study IEPs tended to reflect removal from general education, rather than supports put in place to facilitate a student's placement in general education settings. For example, SAS routinely referred to accessing special settings and materials, learning alternate curriculum, and taking breaks throughout the school day. Together, these SAS reflect broad research findings related to the delivery of special education services for students with significant support needs, including their removal from general education settings (e.g., Morningstar et al., 2017) and the frequent use of breaks during instruction (e.g., Kurth, Born, & Love, 2016). Together, the findings here suggest that SAS statements are failing to provide supports that enable students with significant support needs to be taught in inclusive settings.

Limitations and Recommendations for Research

This study represents one of the only studies exploring the use of SAS. Given that SAS must be determined yearly for each of the approximately 6.6 million students receiving special education services in the U.S. (U.S. Department of Education, 2016), and IDEA requires teams to identify SAS based on peer-reviewed research, it is shocking that there is essentially no empirical research on SAS. Because this area of research is new, the limitations of this study point to important areas for further research.

The primary limitation of this study is generalizability, due to the small number of participating states as well as the relatively small sample size. There might be important district-level contextual factors that influence SAS, which we could not detect. For example, district resources, urbanicity, and personnel expertise might influence the types of SAS identified. Although IEPs conformed with content required by IDEA, it is possible IEP templates used by IEP teams impacted the SAS that were identified for students. Future studies should examine a larger sample of IEPs to understand how these demographic factors might influence SAS.

The study is also limited by the scope of data collected. We did not collect information about how the teams implemented or defined the SAS selected, which SAS they might have considered and rejected, or how they took specially designed instruction, placement, students' present levels, or IEP goals into account. As a foundation for designing SAS decision-making procedures, descriptive information is needed about how IEP teams determine SAS currently, especially for students with significant support needs, including guidance documents teams use, the impact of IEP forms, and social factors such as existing programs and individual team members' professional knowledge influence the ways that determinations are made. Further, understanding the extent to which student and placement characteristics influence SAS selection is needed. For example, students with complex communication needs may have more communication supports than other students, or that students in inclusive settings have a different type or quantity of SAS than those students taught in separate settings. Further research is needed to explore the impact of setting and student characteristics on SAS. Finally, we were not aware of the available supports in general education classrooms, such as universal design for learning (UDL), which minimizes the need for accommodations and modifications when implemented

properly (Jiminez, Graf, & Rose, 2007). How existing environmental and curricular supports might interface with SAS determinations requires attention.

Recommendations for Practice

A lack of research and poor definitions have left IEP teams with little guidance for determining appropriate SAS. While additional research is needed, there are steps IEP teams can take to ensure appropriate SAS decision making. Ecological assessment (Downing, 2008; Haney & Cavallaro, 1996) is a useful strategy to determine the demands of the environment and any skill discrepancies for students; such skill discrepancies could be addressed with specific SAS. By completing ecological assessments across activities (i.e., language arts, social sciences, math) and locations (e.g., classrooms, cafeteria, hallways, recreation areas), an IEP team would be well positioned to develop a comprehensive understanding of SAS needs across domains (e.g., environment, instruction, materials, pacing). To supplement ecological assessments, additional information about teachers' needs (e.g., the need for co-planning time, the need for instruction in making modified materials) should be identified.

Several of our findings suggested IEP teams might benefit from additional information about recommended practices to make appropriate SAS decisions. Although the overuse and inappropriate use of paraprofessionals as an SAS for students with significant support needs is well documented (e.g., Giangreco et al., 2013), personnel supports were frequently selected. Further, SAS should be brought to students when and where they learn, rather than remaining in a separate educational environment (Jackson, Ryndak, & Billingsley, 2000). Increasing expertise among educators to provide effective inclusive education, including the use of assistive technology, peer supports, and providing SAS in inclusive settings, could reduce the restrictiveness of educational placements for students with significant disabilities.

Recommendations for Policy

IEP teams are in need of guidance in selecting appropriate SAS. In any upcoming reauthorization of IDEA, policy makers need to provide a detailed definition of SAS. Ryndak, Jackson, and White (2013) conceptualized the "third wave" of inclusive education as focused on providing instruction to students in general education settings from the ground up, rather than retrofitting existing environments and curriculum to attempt to make them better fit the needs of students with significant support needs. Viewed in such a light, any definition of SAS should focus on first creating universally designed learning spaces and activities, with SAS as extensions of, rather than as replacements or modifications to, these existing spaces and activities. SAS should supplement (rather than supplant) existing universally designed curriculum, with descriptions of how curricular materials and activities will be enhanced or extended. Further, additional policy clarification is needed about how teams should consider SAS before removing students from general education.

Conclusion

Policy and case law have made clear that supplementary aids and services should serve the purpose of supporting students' inclusion in general education classes. These provisions should serve as a "lynchpin" for inclusive education; that is, they should serve to maintain inclusive placements. Our findings, however, paint a different picture. The overuse of some services, such as personnel supports, and underutilization of less intrusive and less costly services, such as assistive technology and peer supports, suggests that teams might not be aware of the types of supports that can aid students within inclusive settings. Clear definitions in policy and much more research is needed to understand how supplementary aids and services can effectively serve their purpose to preserve inclusive placements for students with disabilities.

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Table 1
Dimensions of Supplementary Aids and Services Domains and Their Frequencies

Dimension	Domain (Frequency)	Types of SAS (Frequency)
Physical/Accessibility Dimension		
	Environmental (83)	Preferential (30), Alternate (29), Locker (10), Furniture (7), Ambiance (7)
	Assistive Technology (52)	Motor (20), Literacy (10), Mobility (7), Generic (11), Alternate (4)
	Health and Safety (48)	Bathroom (14), Meals (13), Adult (9), Self-Care (5), Mobility (4), Medical (3)
	Sensory (24)	Tools (*13*), Rooms (7), Breaks (4), Program (2)
	Vision (13)	Location/Placement (4), Contrast (3), Clutter (3), Size (3),
	Hearing (7)	Amplification (5), Other (2)
Instructional Dimension		
	Curricular Accommodations (147)	Writing (70; Strategies (27), Alternatives (16), Tools (15), Scribe (12)); General (29), Instructions (21), Reading (17; Read Aloud (12), Other reading (5)); Math (10).
	Timing, Length, Frequency (80)	More time (42), Less content (20), Chunking (12), drill and practice (6)
	Cognitive/Memory (65)	Instructions (27), Prompts (19), Processing time (13), Reminders (3), Attention (3)
	Curricular Modifications (60)	Lower Level/Easier (21), Generic (18), Format (12), Alternate Curriculum (9)
	General Visual Supports (51)	Schedule, routines (24), Generic (16), Cues, Checklists, Model, Demonstrate (11)

Testing Modifications (36)	Modified test, modified test format (23), Testing supports such as read aloud, responding, and grading tests (7), Extended/Alternate standards (6)
Testing Accommodations (27)	Setting (7), Length (6), Read aloud (6), Time (4), Study guides (4)
Grading for Courses (25)	Pass/Fail (13), Modified weights (8), Avoid penalty (4)
Social - Behavioral - Communication Dimension	
Behavior (106)	Breaks (31), Reinforcement (29), Strategies (26), Monitor, prompt, cue (20)
Communication (43)	Aided AAC (18), partners (13), unaided AAC (7), Speech directed to student (5)
Transition (26)	Prime (19), Routine, schedule, timing (4), Tools/items (3)
Social (21)	Social interaction (11), Social narratives (4), Instruction (3), Peer mentoring (3)
Collaborative Dimension	
Personnel (113)	Academic (24), Safety and personal needs (21), Behavior (18), “Adult assistance” (17), Transition (11), specialist (10), Specials (10), Peer interactions (2)
Staff training (30)	AT use (11), Collaborative (7), AAC (5), Health and safety(5), Teach strategies (2)
Home-school communication (13)	Report (5), Home school notebook (4), Conferencing (3), Direct parents (1)